

The whole substance of the coral is loosely cellular, and the lobes of the head are brittle and easily broken off when in spirits. The base of the stem is furnished with some large tubular fibres, which seem to act as roots to attach it to rocks.

The spicules on the edge of the polype-cells are rugulose or spinulose.

MORCHELLANA SPINULOSA. (Woodcut, p. 30.)

Hab. Indian Ocean.

4. NOTES ON SOME SPECIMENS OF CLAVIFORM PENNATULIDÆ (VERETILLEÆ) IN THE COLLECTION OF THE BRITISH MUSEUM. BY DR. JOHN EDWARD GRAY, F.R.S., V.P.Z.S., F.L.S., &c.

Since my paper, entitled "Revision of the Family *Pennatulidæ*," with description of some New Species in the British Museum," was printed in the 'Annals and Magazine of Natural History' for January 1860, we have received several specimens of club-shaped Sea-Pens (*Veretilleæ*) which further illustrate the species of this group.

Professor Milne-Edwards, in the first volume of his 'Coralliaires,' published in 1857, divides the Claviform *Pennatulæ* into three genera, thus—

1. LITUARIA, with a distinct, well-developed, quadrangular central stony axis.
2. VERETILLUM, with a rudimentary hard central axis.
3. CAVERNULARIA, without any hard central axis, but with four large longitudinal central cells.

Dr. Herklots, in his "Monograph of the *Pennatulidæ*," in the 'Bijdragen tot die Dierkunde' for 1858, divides them into four genera, adding the genus *Sarcobelemnon* to the above list. The species of *Lituaria* and *Sarcobelemnon* are found in the Indian and Australian Oceans, and those of *Veretillum* and *Cavernularia* are confined to the Mediterranean.

The *Veretilleæ* in the British Museum appear to belong to only two genera, viz.—

1. VERETILLUM. The club with a short thick base, with four more or less large longitudinal cells in the centre.
2. LITUARIA. The club with an elongated base, and with a strong, subquadrangular, central, more or less stony axis.

The former group seems to be synonymous with the genera *Veretillum* and *Cavernularia* of Milne-Edwards and *Sarcobelemnon* of Herklots. I call the first genus by the name *Veretillum*, because I find that the specimen of *Pennatula cynomorium* which we have in the British Museum does not appear to have any rudiment of an axis, and has the four large longitudinal cavities in the centre of the coral

which are described as characteristic of *Cavernularia* and *Sarcobelemnon*. Can the septa between these cells have been considered as the rudimentary axis?

VERETILLUM.

The pen club-shaped, with a short, thick, fleshy base; the upper part of the club short and thick, or more or less tapering, covered with close longitudinal rows of polypes; the interspaces between the polypes marked with very close, opaque, imbedded granules; the opening of the polype-cells, when contracted, transverse; the middle of the coral furnished with four quadrangular tubes, and without any hard central axis.

1. VERETILLUM CYNOMORIUM.

Veretillum cynomorium, Pallas, Spic. Zool. t. 13. f. 1-4.

We have a single specimen of this species in the British Museum, which I believe is the specimen described by Ellis, on the Sea-Pens, as *Cynomorium* (Phil. Trans. 1765, vol. liii. 434, t. 13. f. 3); for it has the label on it, written by my late uncle who died in 1806, like the label on the specimen of *Siren* which was presented by Ellis. It certainly has no appearance of any hard central axis, unless the rather hard septa between the central cells may be considered as an axis; if they are, then the same kind of axis is found in each of the other species which I have referred to this genus.

2. VERETILLUM AUSTRALASIÆ.

Sarcobelemnon australasiæ, Gray, Ann. and Mag. N. H. v. 1860, 24, t. 4. f. 1.

The polypes far apart.

Hab. Australia; Port Essington (*J. B. Jukes, Esq.*).

This specimen chiefly differs from the *V. cantoriæ* in the substance of the coral being harder, and in the cells of the polypes being further apart and more scattered, not appearing to be placed in such regular and close longitudinal rows. The specimen seems to have been placed in very strong spirits when first collected, as almost all the polypes are retracted, and the base of the club is wrinkled, as if strongly contracted, and the cavities in the axis are smaller; but all this may have been produced by the sudden and great contraction of the animal at the time it was preserved.

3. VERETILLUM CANTORIÆ.

Cells of polypes close together, in regular longitudinal series.

Hab. Penang (*Dr. Cantor*).

We have a large series of specimens of this species from Penang, where, I am told, they are collected for food. They differ exceedingly from each other; and if they are all of the same species, as I suspect is the case, it shows how difficult it is to give a character that shall define the species of the genus. Some are short, thick, oblong, rounded at each end, varying from $2\frac{1}{2}$ to 3 inches long, with

a short thick base to the club of about half an inch long. In most of the specimens of this form, the polypes are retracted; but in one, some of them are expanded.

In the second group the club is much larger, varying from 3 to 7 or 8 inches long, and is attenuated upwards. The base of the club is short and thick, as in the former group of specimens. The polypes are generally expanded; they are much more slender and more elongate than the polypes of *Lituaría australis*.

Probably the length and tapering form of these specimens may be dependent on their having been placed originally in weaker spirits. The size of the cavities or tubes in the specimens also differ; they are largest in the short broad specimens, but very distinct in all. I am therefore inclined to believe that there are only two distinct genera of the Claviform Sea-Pens.

LITUARIA.

The pen elongate, the upper part slender, tapering, with close longitudinal rows of polypes; the interspace between the polypes covered with close longitudinal rows of distinct circular pores; the opening of the polype-cells, when contracted, longitudinal; the lower part elongate, subcylindrical, smooth; the axis hard, stony, distinct, well developed, quadrangular.

The lower part of the coral, which is destitute of polypes, is elongate, often one-third and rarely nearly half as long as the upper polype-bearing portion of the club; but the length of the stem, as compared with the club, appears to differ, within certain limits, in the different specimens of the same species from the same locality, but they are always larger and more slender than the same part in the genus *Veretillum*.

The specimens of this genus in the British Museum appear to separate themselves into two very distinct groups, which may represent so many species, or may only depend on the manner in which the specimens have been preserved, or even on the strength of the spirit into which they were at first immersed.

In four specimens from Penang, collected by Dr. Cantor, which are slender and white, all the polypes are entirely contracted, leaving a compressed slit over the cell, except in one of the small specimens, where a few of the polypes are partly exerted; they are pale brown. In one of the specimens the fleshy part of the base is thickened, and has contracted so much that the hard axis is exerted nearly an inch beyond the base. In this specimen the base of the club is much shorter and thicker than in the others. From this specimen I am led to believe that the length and slenderness of the club in the genus, when in spirit, is preserved by the rigidity of the internal axis. These specimens are probably the *Lituaría phalloides* of Milne-Edwards (Coralliaires, vol. i. 217), founded on the *Pennatula phalloides* of Pallas (Misc. Zool. t. 13. f. 5, 6, 7, 8).

The second group of specimens were collected by Mr. Rayner in Sharks' Bay, Australia. They are three in number; they are softer

and less contracted than the preceding; the pores on the surface are more distinct, and are furnished with more or less dark polypes, which are all expanded. The polypes in one specimen (which is in the most perfect condition) are all entirely of a uniform black-brown colour. In one of the other specimens (also in a good condition) the polypes are pale brown, with a broad black lower ring at the upper part of the tubular body, near the base of the arms. In the other specimen (which is imperfect) the polypes are all pale brown, like the coral.

In all the three specimens the polypes at the lower half of the club are further apart than they are at the tip; this is especially the case in the specimen which has the dark ring on the polypes, where the polypes in the lower part of the club are very far apart and few in number, and appear as if placed in longitudinal lines. I should propose to call this species provisionally *Lituaria australis*.

5. DESCRIPTION OF TWO NEW GENERA OF ZOOPHYTES (SOLENOCAULON AND BELLONELLA) DISCOVERED ON THE NORTH COAST OF AUSTRALIA BY MR. RAYNER. BY DR. JOHN EDWARD GRAY, F.R.S., V.P.Z.S., F.L.S., ETC.

Among the numerous interesting animals collected by Mr. Rayner during the voyage of H. M. S. 'Herald' is a new form of coral, nearly allied to *Gorgonia*, and especially to the coral called *Cœlogorgia* by M. Milne-Edwards, but very distinct from it. I therefore send a description of it to the Society for publication in the 'Proceedings.'

SOLENOCAULON.

The coral coriaceous, tubular, circular, and simple below, compressed, subquadrangular, tortuous, and more or less branched above, the branches being similar in size and form to the main stem. The main stem and branches furnished with more or less elongate, subsolid, slender branchlets, which are placed on the edge of the large holes in the main stem and branches which communicate with the main tube. These branchlets (and sometimes the branches at the base of them) are furnished with large cells for the polypes, which are placed in one (more frequently in two) series on each side of the branchlets, and sometimes the series are continued on the main stem or branches at the bottom of the branchlets. The polype-cells are rather large, circular, nearly superficial, and furnished with a cup divided into eight conical, connivent lobes, each lobe being formed of some transverse spicules at the base and some obliquely-placed spicules diverging from each lateral edge towards the top above.



1. SOLENOCAULON TORTUOSUM.

Hab. North Australia.